

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 701.74	<b>FOR FURTHER ACTION</b>	
See Form PCT/IPEA/416		
International application No. PCT/EP2004/005878	International filing date (day/month/year) 01.06.2004	Priority date (day/month/year) 10.06.2003
International Patent Classification (IPC) or national classification and IPC E04C2/54, E04C1/42		
Applicant AGHEBO SISTEMI S.R.L. et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 4 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>		
Date of submission of the demand 03.01.2005	Date of completion of this report 04.04.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Vratsanou, V Telephone No. +49 89 2399-7142	
		

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/005878

IAP20 Rec'd PCT/PTO 22 NOV 2005

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

2-6	as originally filed
1, 1a	filed with the demand

**Claims, Numbers**

1-9	filed with the demand
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**Drawings, Sheets**

1/6-6/6	as originally filed
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- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/005878

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

PCT/EP2004/005878

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

V.1 Reference is made to the following documents cited in the International Search Report:

- D1: WO 97/06322 A (COUTO FERNANDO PAZZINI) 20 February 1997 (1997-02-20)
- D2: US-A-4 458 464 (BORGHETTO ODDO) 10 July 1984 (1984-07-10)
- D3: GB-A-2 365 882 (SHACKERLEY) 27 February 2002 (2002-02-27)
- D4: EP-A-1 039 062 (WIRKUS MICHELLE ANN ; WIRKUS RANDOLF ANDREW (AU)) 27 September 2000 (2000-09-27)
- D5: US-A-5 042 210 (TAYLOR JOHN R) 27 August 1991 (1991-08-27)
- D6: WO 02/103130 A (GLASS BLOCK CONSTRUCTION AUST ; LOFTUS & CO PTY W (AU); LOFTUS ROY (AU) 27 December 2002 (2002-12-27)

V.2 In view of the available prior art, see V.1 above, claims 1-9 meet the requirements of PCT with respect to novelty (Article 33(2) PCT) and inventive step (Article 33(3) PCT), the reasons being as follows:

V.21 D1 is regarded as being the closest prior art.

V.22 D1 discloses (the references in *italic* applying to this document):

- a1) a complex of structural elements for forming glass brick walls (*fig. 1-4, 6-7; page 1, lin. 3-5, 14-17; page 2, lin. 9-30*), comprising:
- a2) a substantially C-shaped metal profile bar 1, 2, 5, 6 for perimetrical bounding the wall (*fig. 1, 4; page 2, lin. 12-14, 16*),
- a3) a plurality of dividers 4 horizontally separating each glass brick from the adjacent one and having at least their exposed longitudinal edges of metal (*fig. 3; page 2, lin. 12-14*),
- a4) a plurality of horizontal metal stringers 3 consisting of a horizontal web provided at least along one longitudinal edge with a T-shaped appendix (*fig. 2; page 2, lin. 12-14*),
- a5) said web being provided at regular intervals with seats 8 for fixing the uprights of said dividers 4 (*fig. 2-3; page 2, lin. 15-27*),
- a6) said stringers 3 being provided at their ends with elements 8 to be removably coupled to the interior of the vertical C-shaped profile bars 2, 6 (*fig. 1-4; page 3, lin. 1-23*).

The subject-matter of claim 1 thererfore differs from this known complex in that:

- b1) [said metal is] aluminium;

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.  
**PCT/EP2004/005878**

b2) the central web (14) of the horizontal stringer is provided at its ends with cylindrical portions (16) for fixing the coupling elements with screws.

The subject-matter of **claim 1** is therefore new.

The problems to be solved by the present invention may be regarded as

(i) to reduce the weight of the complex and  
(ii) to provide the possibility of relocating or modifying the complex once assembled,  
see also page 1, lin. 10-19, of the description.

Problem i) is solved through the feature b1), while problem ii) is solved through the feature b2).

Since there is no teaching in the available prior art, see § V.1 above, that would have prompted the skilled person, faced with the above objective technical problems, to modify or adapt D1, thereby arriving at something falling within the terms of the above claim, the solution proposed in **claim 1** is considered as involving an inventive step.

v.23 Claims 2-9, as dependent on **claim 1**, also meet the requirements of PCT with respect to novelty and inventive step <sup>1)</sup>.

<sup>1)</sup> The subject-matter of claims 2, 5 is not clearly defined (Article 6 PCT), because

- in **claim 2** an element is cited with a definite article ("the ribs (10)"), although no such element have been previously defined in **claim 1**.
- in **claim 5** an element is cited with a definite article ("the side walls"), although no such element have been previously defined.

V.3 The subject-matter of claims 1-9 is industrially applicable (Article 33(4) PCT).

IAP20 Rec'd PCT/PTO 22 NOV 2005

## COMPLEX OF STRUCTURAL ELEMENTS FOR FORMING GLASS BRICK WALLS

The present invention relates to a complex of structural elements for forming glass brick walls.

5 PVC frames for glass brick walls are known consisting of a perimetral structure supporting a plurality of horizontal stringers connected together vertically by upright pieces which engage therein by snap-fitting or insertion, to form a lattice which embraces the four edges of each glass brick inserted into it and provides formworks in which cement mix is cast.

10 These known frames present however certain drawbacks and in particular:

- an unpleasant outer appearance due to the presence of the PVC stringers and upright pierces which remain visible covering the spacings,
- the impossibility of modifying or relocating the structure once assembled and the cement has been added,
- 15 - limited use because of its weight.

An object of the invention is to eliminate these drawbacks by providing a complex of structural elements for forming glass brick walls which, besides solving the appearance problem, presents reliable immobility characteristics even in walls of large dimensions.

20 Another object of the invention is to provide a complex of structural elements which can be demounted and remounted if required.

WO 97/06322 refers to a structure consisting of modules that fit into each other, and which can be used for constructing glass block walls that can be removed or remodeled with total recycling of the material.

- 1a -

These and other objects which will be apparent from the ensuing description are attained according to the invention by a complex of structural elements for forming glass brick walls as described in claim 1.

LAP20 Rec'd PCT/PTO 22 NOV 2005

## CLAIMS

1. A complex of structural elements for forming glass brick walls, comprising:
  - a substantially C-shaped aluminium profile bar (2) for perimetrical bounding the wall,
  - 5 - a plurality of dividers (6) horizontally separating each glass brick from the adjacent one and having at least their exposed longitudinal edges of aluminium,
  - a plurality of horizontal aluminium stringers (4) consisting of a horizontal web (14) provided at least along one longitudinal edge with a T-shaped appendix (18), said web being provided at regular intervals with seats for fixing uprights of
  - 10 said dividers, said stringers being provided at their ends (22) with coupling elements to be removably coupled to the interior of the vertical C-shaped profile bars,
- characterised in that the central web (14) of the horizontal stringer is provided at its ends with cylindrical portions (16) for fixing the coupling elements by screws.
- 15 2. A complex as claimed in claim 1, characterised in that the coupling elements consist of a substantially rectangular element which has its minor sides (24) faceted and comprises slotted holes (26) of curved extension said sides consisting of a flat portion (28) and a curved portion (30), the distance between the flat portions being substantially equal to the distance between the facing cavities
- 20 formed by the ribs (10) of the profile bar (2).
3. A complex as claimed in claim 1, characterised by comprising a bar (36) provided in one of its minor sides with slotted holes (38) terminating with an eyelet (40) through which pins (42) are inserted, to be axially engaged in said holes by.

nuts 44, and are locked by their threaded ends in holes provided in the edges of the horizontal stringer 4.

4. A complex as claimed in claims 1 and 3, characterised by comprising an H-shaped profile bar, the flanges of which embrace two back-to-back C-shaped profile bars (2), and which is also provided with two U-shaped appendices (48) which when assembled form a seat (50) for the insertion of a head (52) provided at the end of a pin (54), said pin (54) engaging with slotted holes (38) of the bar (36).
5. A complex as claimed in claim 4, characterised in that the side walls of the C-shaped profile bars present an inner surface provided with two pairs of ribs (10), each rib being provided on that surface facing the other rib with an engagement tooth (12).
6. A complex as claimed in claim 1, characterised in that the stringer fixing seats consist of holes (20) for engagement by pins (34) which also engage the ends of the divider uprights.
- 15 7. A complex as claimed in claim 1, characterised in that the divider consists of ladder-shaped plastic spacers (56) provided at their ends with coupling elements (58); the vertical portions (60) of which are shaped to snap-engage in an aluminium profile bar (60).
- 20 8. A complex as claimed in claim 1 characterised in that each divider and/or each stringer are made of wood and are provided at their ends with two seats for the snap engagement of an aluminium T-shaped appendix.
9. A complex as claimed in claim 1 characterised in that the stringers comprise a longitudinal groove (64) housing a rubber gasket retaining the glass brick.